

wings only there is a trace of two bands beyond discal spot. This variety can be told at a glance by the striking red-brown band across fore wings making it resemble slightly *Xanthorliöe ferrugata*.

This beautiful variety was given me by my kind friend, Mr. William Reiff, who took it in Forest Hills on the hemlock, together with two intermediate forms of the same variety.

Type: 1 ♀; April 5, 1910, Forest Hills, Mass.

ETHOLOGICAL NOTES ON *ELAPHRUS CICATRICOSUS* LEC. (COLEOPTERA)

BY C. A. FROST.

A few words on the occurrence of this rare species of Carabidæ may enable some other collector to profit by my experience if they have plenty of time and patience.

My first specimen was taken at Monmouth, Me., in 1907 (about June 20) on the shore of a lake near the mouth of a small brook. I was sifting a pile of washed-up debris for Staphylinidæ when I noticed it running on the mud near where I had been standing. A careful search failed to discover any more at that time and each summer since, although I have even dammed up the brook in the hope of flooding out a specimen. The cause of its disappearance in this place is probably the removal of a heavy growth of alders that extended down to the edge of the water.

On June 23, 1910, after working this locality in vain, it occurred to me to explore a cold swamp about a mile further up the lake. This swamp, which is never dry, is traversed by a clear trout brook fed by springs and it is so heavily wooded that the sunshine penetrates into it hardly at all. In some places the mud is very deep and is covered more or less thickly with swamp grasses, dead limbs and logs.

I began operations here with a rusty pint dipper which I picked up at the spring, and almost the first dipperful of water brought out a specimen of *Elaphrus* from a slight hollow near the brook. It was *cicatricosus*, and for an hour or more I worked the old dipper—until the bottom fell out—without success. I now think

that the first specimen was driven out by stepping on a piece of stick that was partly buried in the mud. This method of throwing water is usually very successful in driving out specimens of *Heterocerus*, *Staphylinidæ*, *Bembidium* and other *Carabidæ*, but has not worked very well with any *Elaphrus* except *ruscarius*.

After the dipper gave out I began treading around all the likely looking places along the brook and before long drove two specimens out at once. These were the last seen although I continued the work until the approach of darkness put an end to the hunt which proved also to be the last one in this locality for the summer. The success of the three hours hard and careful work in this ideal haunt of *cicatricosus* shows that it is either very rare or the season was not right for it.

The first specimen taken in Massachusetts was at Sherborn on May 10, 1908, and was driven out by suddenly letting water from a flooded cranberry bog down the bed of a small brook. Two more specimens were taken here in the same way May 15, 1910. The bed of this brook is shaded by bushes and alders at the place where they were found and is wet and muddy until late summer when it entirely dries out. All efforts to find specimens here at other times have failed.

It may be of interest to note that five specimens of *Elaphrus clairvillei* Kirby were taken in the densely shaded bed of a brook which, although it attains a fairly large size in the spring months, was then dry and grown up to grass and weeds. This was on September 6, 1907. The specimens were disturbed by the feet of a party of surveyors and were discovered where the grass had been removed. All persuasive methods known to me failed to induce specimens to appear in this place until August 27, 1910, when I secured three of them by removing the grass and driving a trowel into the ground at short intervals. They would suddenly appear and remain motionless until an attempt was made to pick them up. I do not know whether they came out of the ground (which was filled with holes like those made by a woodcock), or were simply hiding in the grass, but I am rather inclined to accept the former alternative.